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Missouri's Nursing Workforce- 2014

Nursing is the protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response and advocacy in the care of individuals, families, communities, and populations.¹ Nurses participate in a wide variety of health care settings and hold a wide variety of positions related to the provision, coordination, and administration of patient care, education of patients and the public about various health conditions, and conductance of health related research.^{1,2} In Missouri, nurses receive licensure through the Department of Insurance, Financial Institutions, and Professional Registration, Board of Nursing.

The Board of Nursing licenses three categories of nurses:

- 1) Licensed Practical Nurse (LPN) – requires graduation from a school of practical nursing.
- 2) Registered Nurse (RN) – requires graduation from a school of professional nursing.
- 3) Advanced Practice Registered Nurse (APRN) – registered nurse providing advanced care in a specialty area of clinical nursing.

The Board of Nursing and the Missouri Department of Health and Senior Services (DHSS) collect data related to Missouri's nursing professionals. Basic demographic information on licensees is available from the Board's publicly reported data, and for the purposes of this report, this data is supplemented by voluntary survey information collected through the Missouri Health Professionals Registry and mandatory information collected through registrations submitted to the DHSS Bureau of Narcotics and Dangerous Drugs by way of the Missouri Healthcare Workforce Registry and Exchange (MoHWoRx), an information system developed by DHSS to help health professionals meet state registration requirements and to provide comprehensive and timely information on health care access statewide.³

This report serves to provide a baseline assessment of Missouri's nursing workforce by providing basic information related to the three categories of nurses. It should be noted that the information in this report was obtained on March 3, 2014 and is current as of that date. Additionally, due to the use of two dynamic data sets, discrepancies in total numbers may occur

¹ American Nurses Association, *What is Nursing?*, Accessed March 20, 2014 at <http://www.nursingworld.org/EspeciallyForYou/What-is-Nursing>

² Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2014-15 Edition*, Registered Nurses, Accessed March 20, 2014 at <http://www.bls.gov/ooh/healthcare/registered-nurses.htm#tab-1>

³ Missouri Division of Professional Registration, Nursing Board, Downloadable Listings, <http://pr.mo.gov/listings-nur.asp>

Advanced Practice Registered Nurse (APRN)

There are 7,280 APRNs licensed by Missouri. Based on reported primary practice and/or contact county, 5,652 APRNs are located in Missouri while 1,628 of the registrants are located out of state or in an unknown county. As shown in Figure 1, APRNs are in all but two Missouri counties with St. Louis County having the most APRNs (1,251). In terms of geography, urban counties in Missouri have a ratio of 1 APRN per 911 residents (4,160 total), while rural counties have a ratio of 1 APRN per 1,495 residents (1,492 total). (Urban and rural classifications used are those previously established by DHSS).⁴

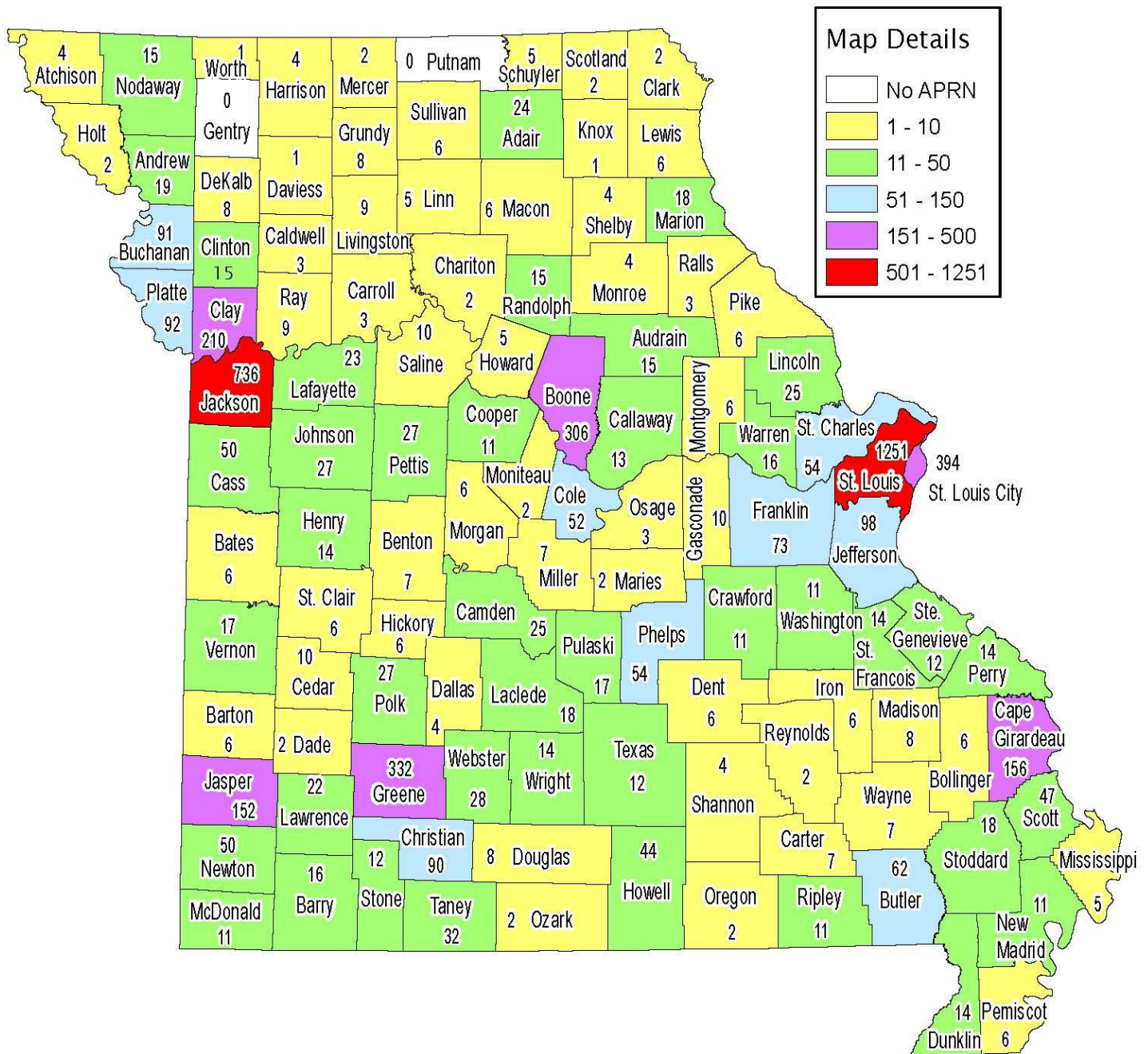


Figure 1. APRN Totals by County

⁴ Missouri Department of Health and Senior Services, *Health in Rural Missouri*. 2012 Population Estimates Accessed March 31, 2014 at <http://health.mo.gov/living/families/ruralhealth/pdf/biennial2013.pdf>.

Table 1 lists the current APRN categories and areas of clinical nursing specialties (Nurse Practitioner (NP) and Clinical Nurse Specialist (CNS)) with total number of licensees listing a Missouri address currently in those areas.

Adult Acute & Critical Care CNS	8	Adult Psych/Mental Health NP	47	Gerontological CNS	21	Pediatric NP	467
Acute Care NP	120	Community Health CNS	5	Gerontological NP	61	Perinatal CNS	3
Acute Care Pediatric NP	4	CNS	2	Maternal-Child CNS	2	Psych/Mental Health NP	2
Adult Health CNS	133	Child-Adolescent Psych/Mental Health CNS	16	Neonatal Acute & Critical Care CNS	2	Women's Health NP	271
Adult NP	654	Advanced Dialysis CNS	3	Nurse Anesthetist	1,175		
Advanced Oncology CNS	11	Advanced Dialysis NP	1	Nurse Midwife	67		
Advanced Oncology NP	2	Family NP	2,153	Neonatal NP	130		
Adult Psych/Mental Health CNS	89	Family Psych/Mental Health NP	37	Pediatric CNS	20		

Table 1. Missouri APRN Categories and Clinical Nursing Specialties

Nearly 35% of the 1,788 APRNs who completed a voluntary survey question regarding the primary setting of their work reported working in a hospital setting (Figure 2). The next two largest work settings are private physician/group practice (19%) and outpatient care clinic (15%).

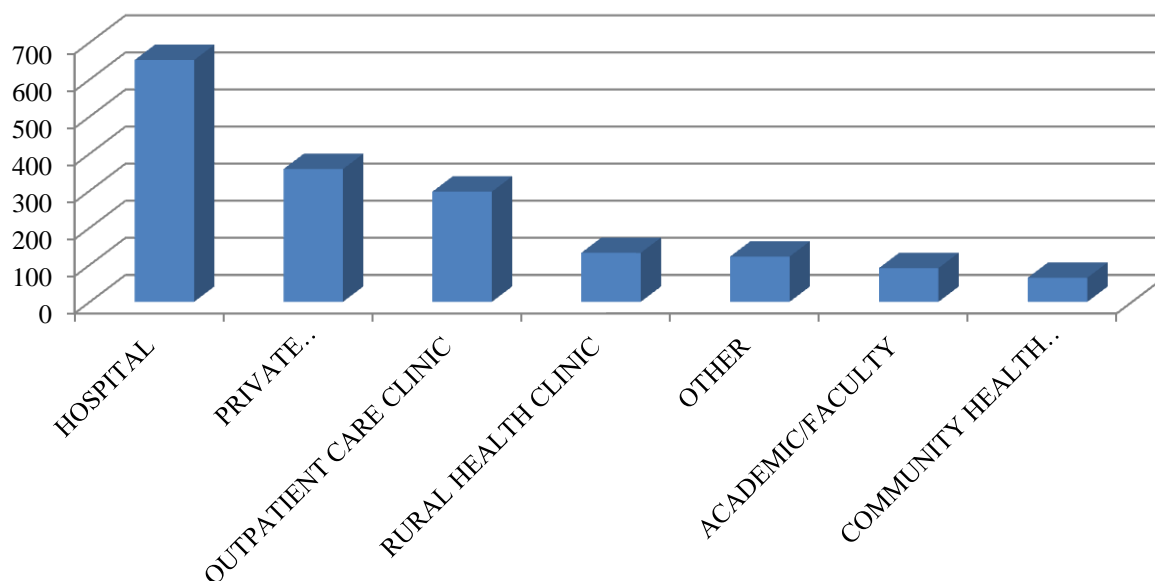


Figure 2. APRN Primary Work Setting

Of the 1,577 APRNs who completed voluntary survey information about the number of direct patient care hours practiced per week, most indicated that they worked 40 hours (Figure 3). The next largest number declared no direct patient care hours. Of the APRNs who reported working direct patient care hours, the mean was 30.4 per week.

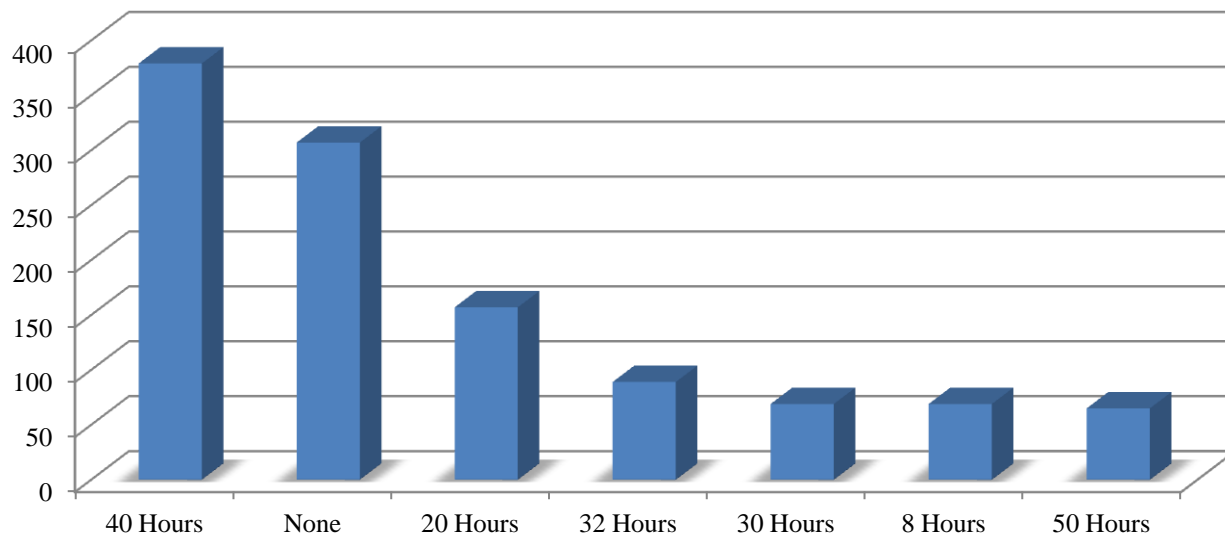


Figure 3. APRN Direct Patient Care Hours

1,490 APRNs completed a voluntary survey question about the state in which they graduated. Most respondents (78%) received nursing training in Missouri (Figure 4). The next highest graduation state was Kansas (5%) followed by Illinois (4%).

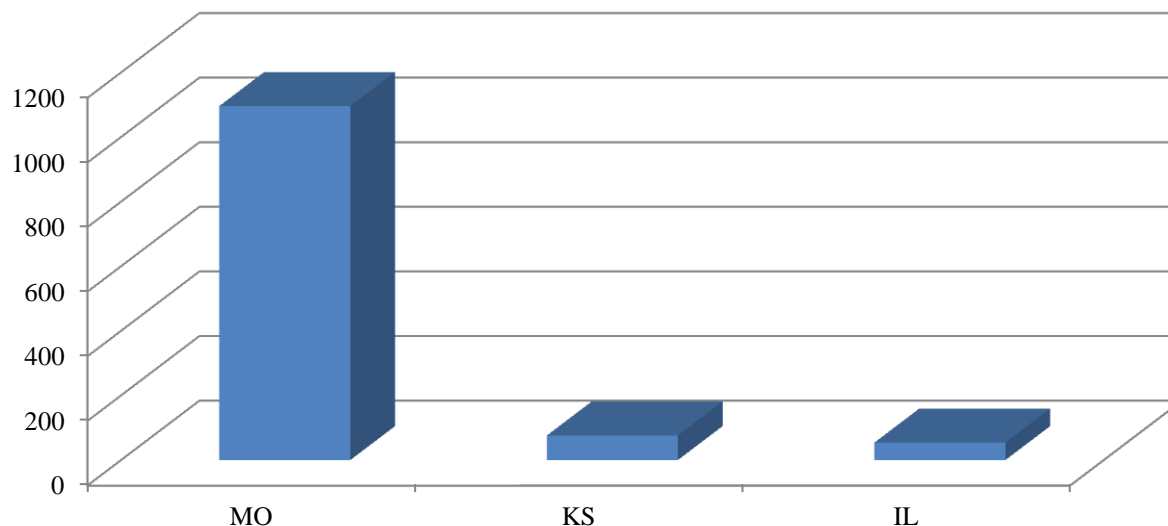


Figure 4. APRN Graduation State

1,407 APRNs provided information about the year in which they graduated. The top two responses were in 1996 and 1997 (Table 2). The mean graduation year was 1989.

Graduation Year	APRN Responses
1996	54
1997	53
1980	52
1982	50
1994	49
1995	48

Table 2. APRN Graduation Year

1,411 APRNs provided information about degree level achieved. APRN survey respondents primarily have a Master's level degree (Table 3).

Degree Level	APRN Responses
Associate	19
Diploma	49
Bachelor's	106
Master's	1,175
Doctorate	62

Table 3. APRN Degree Level Achieved

Dividing the 7,280 APRN licensees in Missouri into individual ages, the largest number of APRNs are age 59 and 60 followed closely by ages 57, 42 and 41. If the licensees are divided into age ranges, as shown in Figure 5, 44% of the APRN workforce in Missouri is over 50 years of age with 31% below the age of 40. There were no APRN licensees below the age of 25. Note that nurses in their 70s and 80s are not included in the age distributions because complete age ranges were not available for those groups.

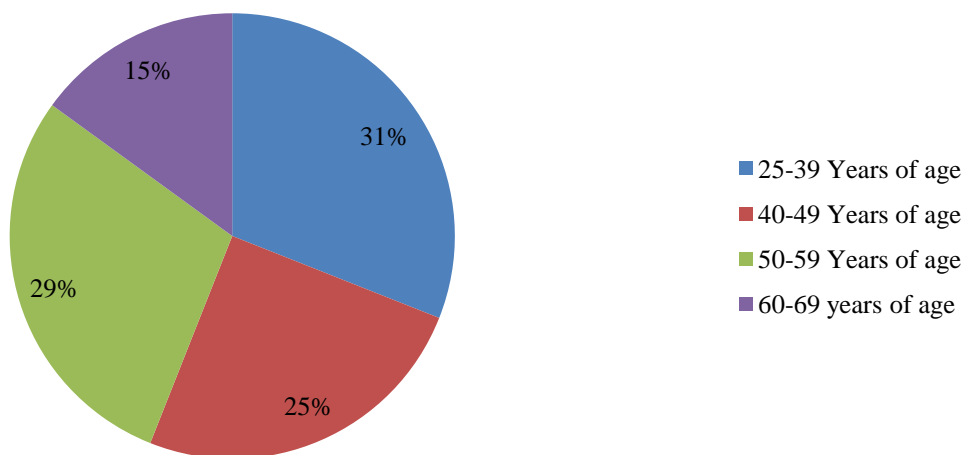
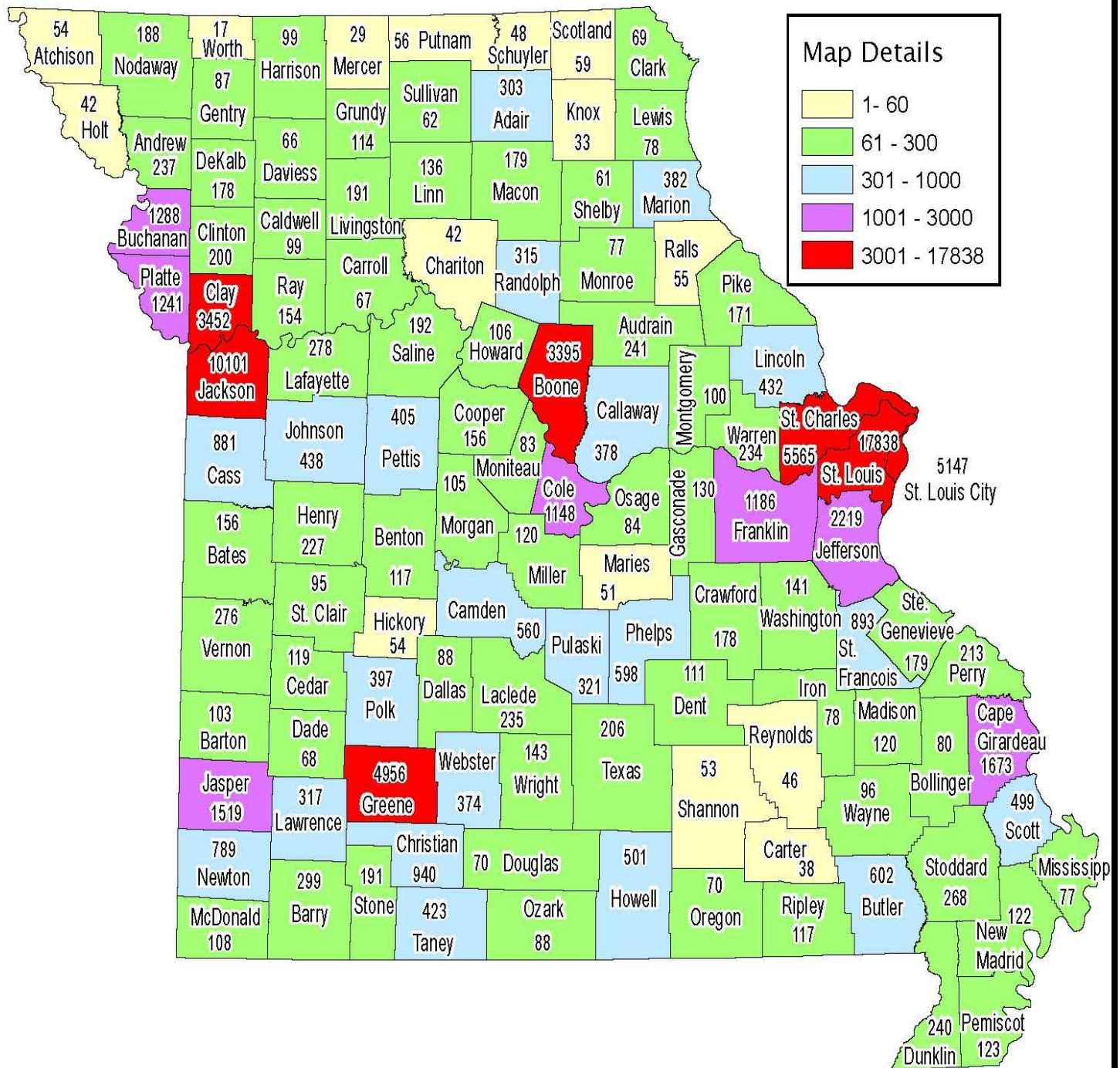


Figure 5. APRN Age Distribution

Of the 3,527 APRN licensees who responded to a survey question concerning racial identity, the majority (92%) indicated Caucasian.

Registered Nurse (RN)

Currently, 97,833 individuals hold a Missouri RN license. Of those, 81,297 list a current Missouri contact and/or practice address, with 16,536 listing out of state or unknown addresses. The total number of RNs by county varies widely throughout Missouri (Figure 6). The county with the most RNs (17,838) is St. Louis County (1 RN per 56 residents) while the county with the fewest (17) is Worth County (1 RN per 122 residents).⁵ Geographically, urban counties in Missouri have a ratio of 1 RN per 64 residents (59,539 total), while rural counties have a ratio of 1 RN per 102 residents (21,758 total).⁴



27,212 RN's provided information regarding their primary work setting. The majority (16,091 or 59%) reported working in a hospital setting (Figure 7).

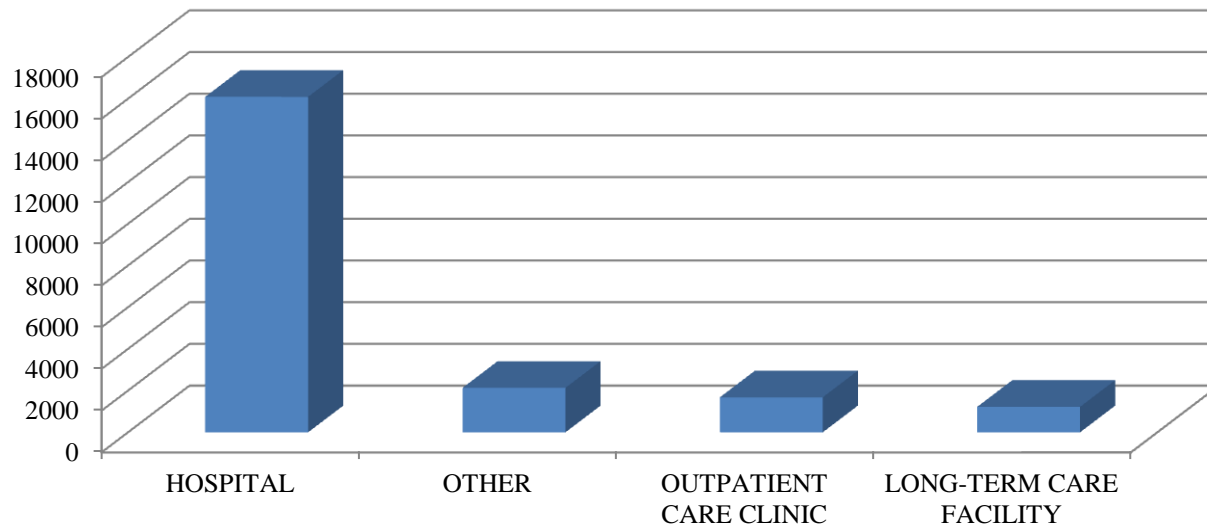


Figure 7. RN Primary Work Setting

Of the 24,473 RNs who completed voluntary survey information about the number of direct patient care hours practiced per week, 5,026 respondents listed no hours (Figure 8). Of those respondents who reported any direct patient care hours the mean number of hours worked was 30.6.

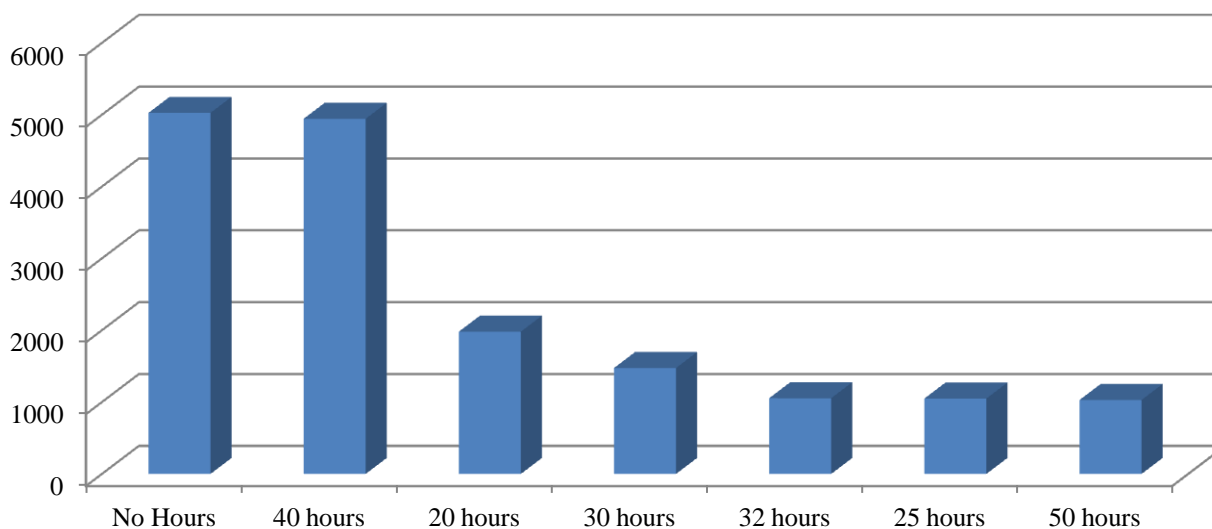


Figure 8. RN Direct Patient Care Hours

25,952 RNs responded to a survey question about the state in which they graduated nursing school. Most (21,956) of the RN survey respondents indicated that they received their education in Missouri (Figure 9), followed by Illinois (913) and Kansas (875).

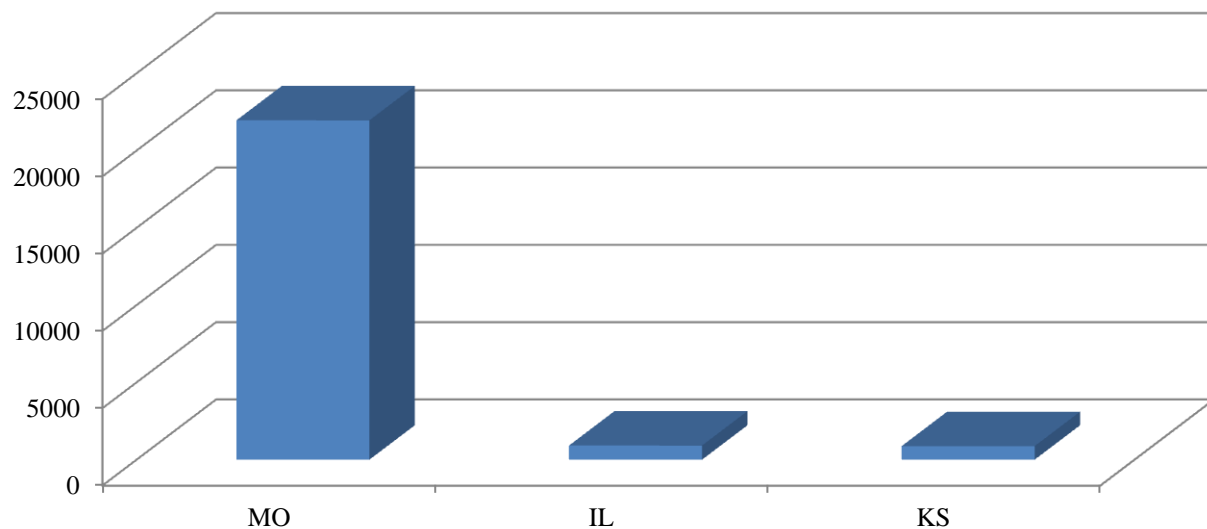


Figure 9. RN Graduation State

25,900 RNs provided information about their year of graduation. RN survey respondents are primarily recent graduates with 25% having graduated within the last five years (Table 4). The mean graduation year of all respondents was 1996.

Graduation Year	RN Responses
2011	1,590
2010	1,373
2009	1,245
2012	1,147
2008	1,134
2007	1,107

Table 4. RN Graduation Year

25,952 RNs provided information about degree level achieved (Table 5). RN respondents primarily have Bachelor's degrees (44%).

Degree	RN Responses
Associate	9,117
Diploma	2,225
Bachelor's	11,439
Master's	3,005
Doctorate	166

Table 5. RN Degree Level Achieved

Of the 81,297 RN licensees within the state, the largest number are 57 years of age followed closely by those ages 56 and 58. Using the same methodology applied to APRNs, the RN workforce is seen to be slightly younger than the APRN workforce (Figure 10), with 42% of RNs over the age of 50 and 36% under the age of 40 (44% and 31% respectively for APRNs).

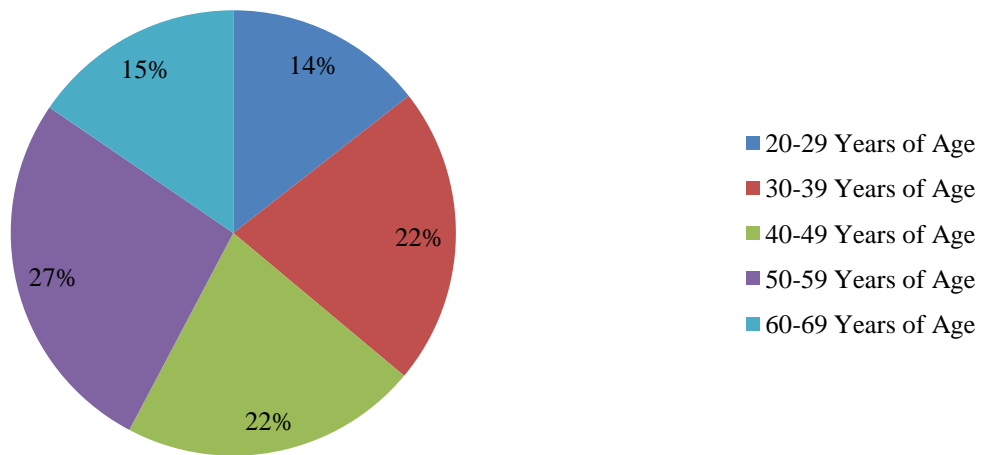


Figure 10. RN Age Distribution

Of 53,177 RN licensees who responded to a survey question concerning racial identity, the majority (90%) indicated Caucasian.

Licensed Practical Nurse (LPN)

Note: Of the 23,790 LPNs in Missouri, only 503 (2%) partially or fully completed a census survey. Due to such a low response rate, LPN data analysis is limited.

There are 25,745 Missouri LPN licensees. Of those, 23,790 list a current Missouri contact or practice address. As shown in Figure 11, the county with the largest total number of LPNs (2,413) is St. Louis County (1 LPN per 415 residents) and the county with the fewest total number (24) is Worth County (1 LPN per 87 residents). Quite notably, urban counties in Missouri have a ratio of 1 LPN per 338 residents (11,211 total), while rural counties have a ratio of 1 LPN per 177 residents (12,571 total).⁴

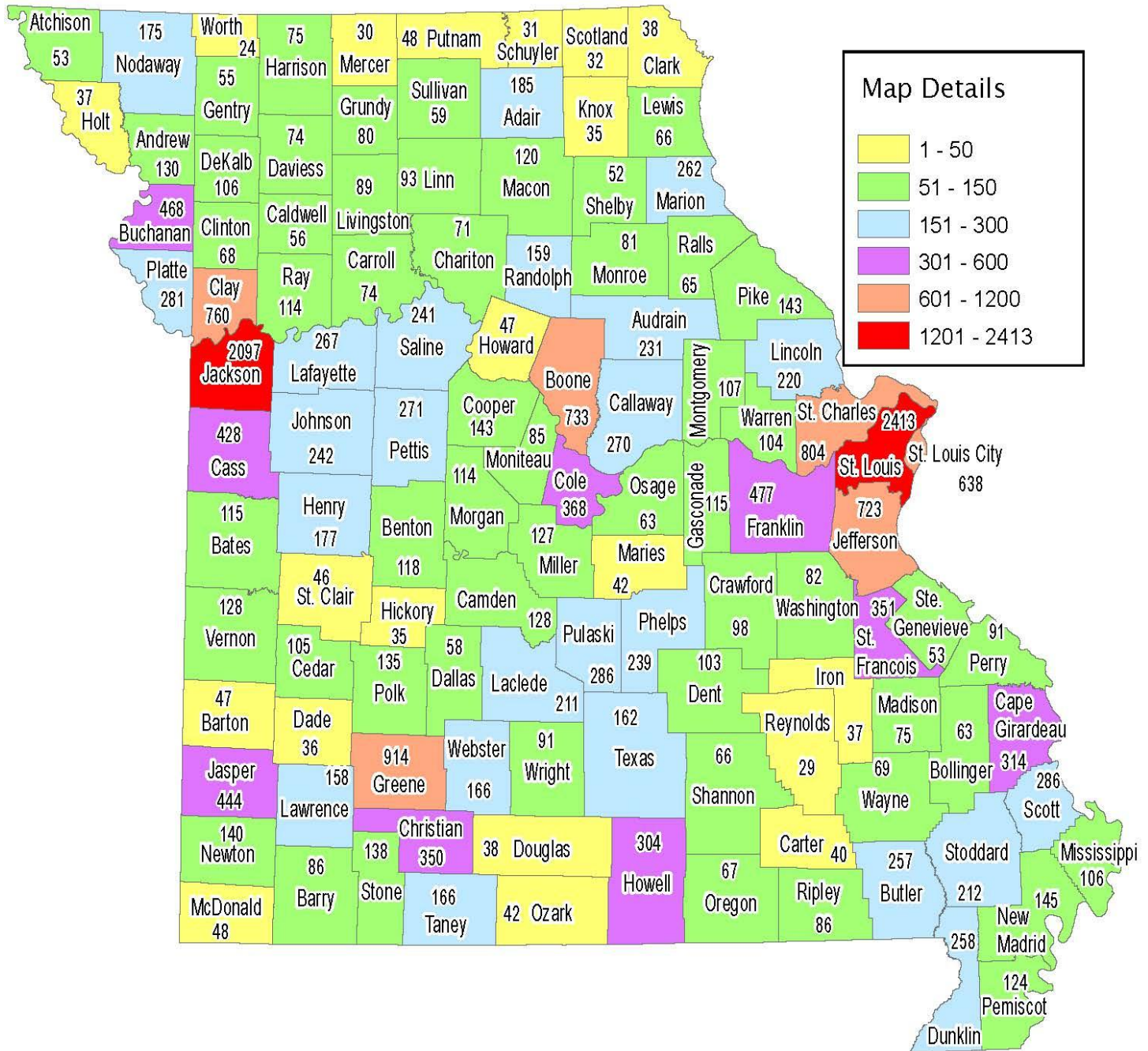


Figure 11. LPN Totals by County

Of the 25,745 licensed LPNs, 503 responded to a voluntary survey question about their primary work setting. Most LPNs worked in the Hospital setting (Figure 12).

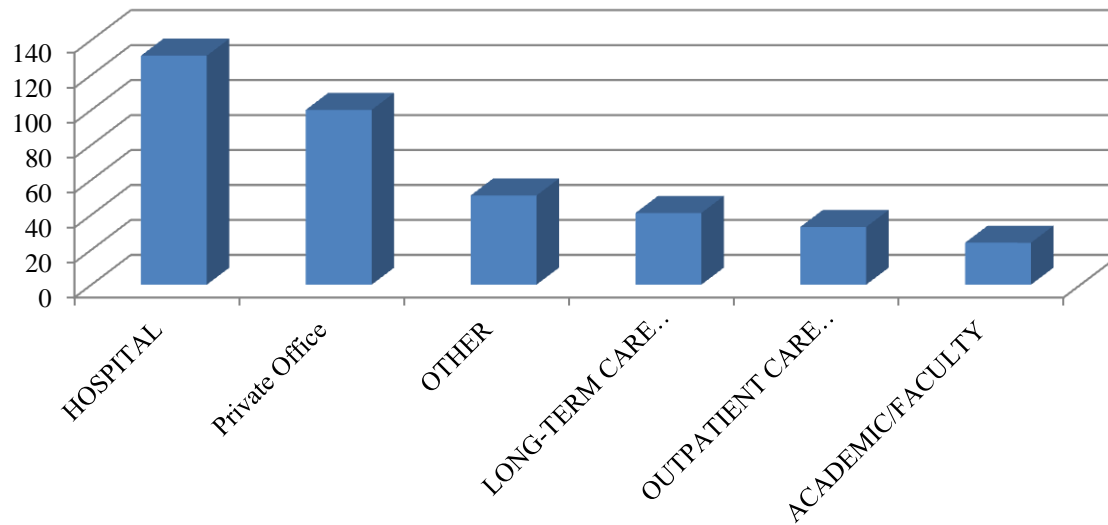


Figure 12. LPN Primary Work Setting

Of the 23,790 LPNs within the state of Missouri, the largest number are 33 years old, followed by age 31 and 42. The ages of LPNs in Missouri are fairly evenly distributed among the decade age groups (Figure 13). Of the three nursing licenses in Missouri, LPN licensees are the youngest with 38% of licensees above the age of 50, and 39% below the age of 40.

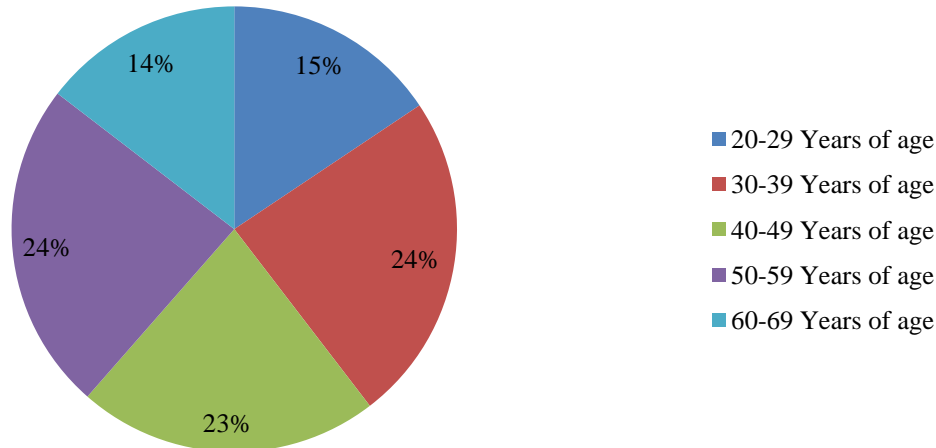


Figure 13. LPN Age Distribution

Of 10,091 LPN licensees who responded to a survey question concerning racial identity, the majority (84%) indicated Caucasian while 13% indicated African American.

Discussion

Working with data sets from the Board of Nursing and the Missouri Department of Health and Senior Services, this assessment provides a unique picture of Missouri's nursing workforce. What is immediately clear from the assessment is that the nursing workforce in Missouri is a large, highly complex group of professionals that deserves continued evaluation and analysis.

The considerable number of Missouri located APRNs listed as Family Nurse Practitioners (2,153) holds widespread implications for the assessment of access to primary medical care services, including the analysis of Health Professional Shortage Areas (HPSAs). Utilizing data from the Health Resources and Services Administration (HRSA) Data Warehouse, as of December 2013, there were 193 Primary Medical Care HPSAs (i.e. areas with shortages of primary care physicians) in Missouri. It is estimated 1,832,315 Missourians (30 percent of the total population) reside in these HPSAs, and an additional 351 primary care physicians are needed to provide services to these residents and end the HPSA designation. This assessment provides an indication that APRNs may already be filling the gap left by primary care physicians in most, if not all areas of Missouri. It is worth indicating here that Missouri is considered by the nurse practitioner advocacy group, the American Association of Nurse Practitioners, to have "Restricted Practice" laws that limit the ability of a nurse practitioner to engage in at least one element of practice.⁶

One of the most intriguing findings of the assessment is the number of LPNs located in rural counties. As shown in Figure 11, Missouri's urban counties have a ratio of 1 LPN per 338 residents, nearly twice the ratio of rural counties (1 per 177 residents). This is quite unique, as urban ratios of health professionals are almost uniformly lower than rural ratios.^{7,8} This could be due to a number of factors, such as lower overall levels of educational attainment in rural areas, a reliance on less expensive care providers in rural areas, a lower level of specialized care settings in rural areas, or lack of opportunities for attainment of education leading to advanced licensure.⁴

One interesting facet of the rural/urban dichotomy is the difference between rural and urban ratios of RNs and LPNs. As shown in Table 6, rural counties with no hospital (possibly indicating a lack of health care infrastructure) have a ratio of 1.36 RNs for every LPN, rural counties with at least 1 hospital have 1.79 RNs for every LPN, and urban counties (all of which have at least 1 hospital) have a ratio of 4.69 RNs for every LPN.

Rural County, No Hospital (42 counties)	Rural County with at Least 1 Hospital (59 counties)	Urban County (14 counties)
1.36	1.79	4.68

Table 6. Ratio of RN to LPN by County Type



⁶ American Association of Nurse Practitioners, *State Practice Environment*. Accessed April 1, 2014 at <http://www.aanp.org/legislation-regulation/state-legislation-regulation/state-practice-environment>.

⁷ Missouri Department of Health and Senior Services, *Missouri's Dental Hygiene Workforce-2014*. Accessed April 1, 2014 at <http://health.mo.gov/living/families/primarycare/pdf/DentalHygieneWorkforceAnalysis2014.pdf>.

⁸ Missouri Department of Health and Senior Services, *Missouri's Social Work Workforce- 2014*. Accessed April